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MYCOTIC STOMATITIS OF CATTLE[1]

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Numerous letters have been received by this bureau in recent years relative to the existence of a disease affecting the mouths and feet of cattle in certain Eastern and Central Western States. Later reports indicate that the malady also occurs in the Southwest, where it has caused much alarm among the stockmen, owing to its similarity to the foot-and-mouth disease of Europe. The disease, which is to be discussed under the name of mycotic stomatitis, has been carefully investigated by this department on various occasions, and it is with the view of giving the results of these clinical investigations as well as to assert its noncontagiousness and to differentiate it from the virulent foot-and-mouth disease, which it so closely simulates, that this publication is sent forth.

NAME AND SYNONYMS

The name stomatitis signifies that there is present in the affected animal an inflammation of the mucous membrane of the mouth. This inflammation, which quickly develops into ulcers, is one of the principal and most frequently observed lesions. Mycotic stomatitis refers to that form of stomatitis which results from eating feed containing irritant fungi. Thus the name not only suggests the cause of the disease, but also indicates the location of the earliest and most prominent symptoms. Other names which have been applied to this disease by different writers are sporadic aphthæ; aphthous stomatitis; sore mouth of cattle; sore tongue; benign, simple, or noninfectious foot-and-mouth disease; mycotic aphthous stomatitis; and sporadic stomatitis aphthosa.

[1] Originally issued in 1904 as Bureau of Animal Industry Circular 51. Now reprinted with slight revision.

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CHARACTER OF THE DISEASE

Mycotic stomatitis is a sporadic, or noninfectious, disease which affects cattle of all ages that are on pasture, but more especially milk cows. It is characterized by inflammation and ulceration of the mucous membrane of the mouth, producing salivation and inappetence, and secondarily affecting the feet, which become sore and swollen. Superficial erosions of the skin, particularly of the muzzle, and of the teats and udders of cows, may also be present, with some elevation of temperature and emaciation.

CAUSE

This disease, as its name indicates, results from the eating of forage containing fungi or molds. It is probable that more than one fungus is involved in the production of this disease, but no particular species has been definitely proved to be the causative factor. Several attempts have been made by the writer to determine the exact cause and also to transmit the disease to other animals by direct inoculation, but with negative results. Suspicion, however, has been directed by various observers to the Uromyces and the red and black rusts that occur on clovers. These fungi cause very severe irritation of the lining membrane of the mouth, producing sometimes a catarrhal, at other times an aphthous, and occasionally an ulcerous, stomatitis. The fungus of rape, etc. (*Polydesmus excitiosus*), is very irritating to the mouths and feet of cattle, causing severe inflammation and in some instances producing symptoms that have been mistaken for foot-and-mouth disease. The fungi (Penicillium and Puccinia) found on grasses have also been credited with the production of stomatitis. The fact that this disease disappears from a locality at a certain time and reappears at irregular intervals would suggest the probability that certain climatic conditions were essential for the propagation of the causative fungi, since it is well known that the malady becomes prevalent after a hot, dry period has been followed by rain, thus furnishing the requirements necessary for the luxuriant development of molds and fungi. Owing to this fact the disease is observed in one locality during one season and in an entirely different section another year, but reappears in the former center when favorable conditions prevail. In this way the affection has occurred at irregular intervals in certain sections of both the United States and Canada.

SYMPTOMS AND LESIONS

Among the first symptoms observed in mycotic stomatitis are inability to eat, suspension of rumination, frequent movements of the lips with the formation of froth on their margins, and in some cases

a dribbling of saliva from the mouth. There is a desire to eat, and frequent attempts to take food are made, but prehension is very difficult. If, however, food is placed on the back of the tongue it is readily masticated and swallowed.

If the mouth is examined at this time it will be found red and hot, and exceptionally small blisters will be seen, which, however, quickly become eroded and develop into active ulcers varying in size from one-eighth inch to 1 inch in diameter. Where several ulcers have coalesced a large and irregularly indented patch is formed. These erosions are most frequently found on the gums around the incisor teeth, on the dental pad, inside the lips, and on the tip of the tongue, but they also occur on the cheeks, interdental space, and dorsum of

FIG. 1.—Cow affected with mycotic stomatitis.

the tongue. The ulcers have a hemorrhagic border, and a depressed suppurating surface, and contain a brownish or yellowish colored débris, which is soon replaced by granulation tissue.

As a result of this sloughing of the tissues and the retention of food in the mouth, a very offensive odor is exhaled. The muzzle becomes dry and parched in appearance, which condition is shortly followed by erosions and exfoliations of the superficial layer of the skin. Adherent brownish crusts and scabs form over the parts, and similar lesions are seen around the nostril and external surface of the lips.

In some cases there are associated with these alterations a slight swelling and painfulness in the region of the pasterns, at times affecting the forefeet, at other times the hind feet, and occasionally all four feet. In a few cases the swelling may extend above the fetlock,

but it has never been observed above the knee or hock. The skin around the coronet may occasionally become fissured, and the thin skin in the cleft of the foot eroded and suppurated, but without the formation of vesicles.

As a result of these foot lesions, the affected animal may assume a position with its back arched and the limbs propped under the body as in a case of founder, and will manifest much pain and lameness in walking (see fig. 1). If it lies down the animal shows reluctance in getting up, and, although manifesting no inclination to move about, when forced to do so there is more or less stiffness and a tendency to kick or shake the foot as if to dislodge a foreign body from between the claws.

In some outbreaks the milk cows have slight superficial erosions on the teats which at times extend to the udder. The cracks in the skin are filled with serum and form brownish colored scabs. The teats become tender and the milk secretion diminishes; in some cases it disappears. A similar tendency toward the formation of fissures and scabs on the skin of the neck and shoulder manifested itself in an outbreak in Texas, and this feature was likewise noticeable in the disease when it occurred in Maryland and Virginia, in 1889.

In mild cases, only the mouth lesions may be observed, or these alterations may be associated with one or more of the other above-described symptoms, but in severe cases where there is a generalized mycotic intoxication one animal may show all these alterations. When the disease is well developed the general appearance of the animal is one of great lassitude, and it either stands off by itself with hind feet drawn under the body and its forefeet extended or it assumes a recumbent position.

Owing to the inability to eat and to the general systemic disturbance present, the animal loses flesh very rapidly and becomes greatly emaciated in the latter stages of the disease. The temperature and pulse are somewhat increased, the former two or three degrees, the latter to from 75 to 90 beats per minute. The fever is not lasting, and these symptoms are soon modified. The animal has an anxious look, and in a few cases there is gastrointestinal irritation, the feces being thin, of a dark color, and of an offensive odor.

PROGNOSIS AND MORTALITY

Mycotic stomatitis is not a serious disease, and in uncomplicated cases recoveries soon follow the removal of the cause and the application of the indicated remedies. In such cases complete restoration may take place within one week. In mild outbreaks a large percentage of the animals will recover without treatment, but that the disease is fatal is shown by the fact that animals which develop an

aggravated form of the affection succumb if not treated. In such animals death occurs in 6 or 8 days, but the mortality in the serious outbreaks thus far investigated has been less than 0.5 per cent. The course of this disease is irregular and runs from 7 to 15 days, the average case covering a period of about 10 days.

DIFFERENTIAL DIAGNOSIS

FOOT-AND-MOUTH DISEASE

In examining a case of mycotic stomatitis it is important not to mistake it for foot-and-mouth disease, which has appeared in this country on seven occasions only. This may be easily accomplished by taking into consideration the fact that in the contagious foot-and-mouth disease there is a rapid infection of the entire herd, as well as of any hogs and sheep that may be on the premises. It is also readily transmitted to neighboring herds by the spread of the infection from diseased animals, but it never occurs spontaneously.

The characteristic lesion of foot-and-mouth disease is the appearance of vesicles containing serous fluid in the mouth and on the udder, teats, heels, and coronary bands of the affected animals. Drooling is profuse, and there is a peculiar smacking sound made by sucking the affected lips.

Mycotic stomatitis occurs sporadically on widely separated farms, affecting only a few animals in each herd, and the lesions produced consist of erosions without the typical vesicular formations of foot-and-mouth disease. The failure of the vesicles, if any appear, to spread extensively in the mouth, the absence of these blisters on other portions of the body—notably the teats and udder, and characteristically the feet—together with the absence of infection in the herd, and the inability to transmit the disease to calves by inoculation distinguish between this affection and foot-and-mouth disease. Scab formation on the muzzle and nostrils is not present in foot-and-mouth disease. The erosions of the mouth are not so extensive and they heal more rapidly in mycotic stomatitis. The swelling of the feet and stiffness of the animal are more marked in mycotic stomatitis.

ERGOTISM

The lesions resulting from ergotism may be differentiated from those of mycotic stomatitis by the lack of ulcerative eruptions in the mouth and by the location of the lesions at the tips of the ears, end of the tail, or upon the lower part of the legs, usually below the knees or hocks. The lesions of ergotism do not take the forms of ulcers or festers, but the end of the limb affected is wholly diseased and the eruption extends entirely around the limbs, followed soon afterwards by a distinct line of demarcation between the healthy skin above and

the diseased below. The absence of suppurating sores between the claws and on the mucous membrane of the mouth, the knowledge that the lesion upon the limb in question extends uninterruptedly around it, and the presence of ergotized seeds in the hay or grain fed to animals should point conclusively to a diagnosis of ergotism.

FOUL FOOT

In foul foot, or ground itch, of cattle, the inflammation of the skin and toes usually affects but one foot. It begins as a superficial inflammation, followed by sloughing, ulceration, and the formation of fistulous tracts which may involve the tendons, bones, and joints. The mouth remains unaffected. The presence of the disease may be traced to filth and poor drainage.

NECROTIC STOMATITIS

In necrotic stomatitis (calf diphtheria) there is a formation of yellowish, cheesy patches in the mouth without any lesions of the feet or udder. It affects sucking calves chiefly, and is caused by *Actinomyces necrophorus* (*Bacillus necrophorus*).

VESICULAR STOMATITIS

For information regarding vesicular stomatitis see Department Bulletin 662.

TREATMENT

The treatment of mycotic stomatitis should consist in first removing the herd of cattle from the pasture in which they have been running. The affected animals should, if it is possible, be brought to the barn or corral and fed on soft, nutritious feed, such as bran mashes, ground feed, and gruels. A bucket of clear, cool water should be kept constantly in the manger, so that the animal may drink or rinse the mouth at its pleasure, and it will be found beneficial to dissolve 2 heaping tablespoonfuls of borax or 1 tablesponful of potassium chlorate in each of the first two buckets of water taken during the day. If the animals are gentle enough to be handled, the mouth should be swabbed out daily with antiseptic washes, such as a 2 per cent solution of carbolic acid, or a 1 per cent solution of compound solution of cresol or of permanganate of potash, or 1 part of hydrogen peroxide to 2 parts of water. This should be followed by astringents, such as one-half tablespoonful of alum, borax, or chlorate of potash placed on the tongue. Probably a more satisfactory method of administering the antiseptic treatment to a large number of animals would be to mix thoroughly 2 teaspoonfuls of pure carbolic acid every morning in a quart of bran mash and give to each affected animal for a period of five days.

Range cattle may be more readily treated by the use of medicated salt placed in troughs accessible to the animals. This salt may be prepared by pouring 4 ounces of crude carbolic acid upon 12 quarts of ordinary barrel salt, after which they are thoroughly mixed.

The lesions of the feet should be treated with a 2 per cent solution of carbolic acid, while the fissures and other lesions of the skin will be benefited by the application of carbolized vaseline or zinc ointment. If the animals are treated in this manner and carefully fed the disease will rapidly disappear.

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